The Examiner rejected claims 11-13 under 35 U.S.C. § 102(b) as anticipated by or in the alternative, as obvious over Smuck et al. (DE 4202920 A1). Applicants respectfully traverse this rejection.

The Examiner rejected claims 1-10 under 35 U.S.C. § 103(a) as being unpatentable over either Sumitomo or Hiraoka in view of Sandt.

Rejection of Claims 1-13 under 35 U.S.C. § 112

Claims 1-13 are rejected under 35 U.S.C. § 112, second paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention. This rejection is respectfully traversed, to the extent that it is maintained, and reconsideration is respectfully requested.

Claims 1-13 have been amended to more fully clarify and describe the invention. The specific instances noted by the Examiner as well as other portions of the claims were amended to more clearly describe the invention. No new subject matter was added thereby.

(Applicant has also enclosed a substitute specification to respond to the Examiner's objection to the specification.)

In view of the above amendments, it is submitted that the subject matter of the invention is described in the specification in such a way as to enable one skilled in the art to which it pertains to make and/or use the invention. Withdrawal of this rejection is therefore respectfully requested.

Rejection of Claims 11-13 under 35 U.S.C. § 102(b)

Claims 11-13 are rejected under 35 USC § 102(b) as anticipated by Smuck et al. (DE 4202920 A1 ("Smuck"). Applicant respectfully traverses this rejection and, for the reasons set forth below, submits that the claims are patently distinguished from the cited reference.

To anticipate a claim, a prior art reference must disclose, either explicitly or implicitly, each of the required limitations. Smuck offers a product and process, an embodiment of which heats the laminate by use of two hot roller pairs and cools the same by use of cold roller pairs.

Applicants invention offers an apparatus for manufacture of a composite material comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, where said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, said apparatus comprising means for laminating said at least one layer of reinforcing woven material and said at least one layer of foil together, wherein said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure, as the apparatus comprises means for lamination of the composite material by a combined pressure and heat supply, wherein the apparatus further comprises means for fixation of the uncooled or partly cooled composite material, wherein said fixation means cooperates with a controllable cooling means.

Smuck fails to disclose use of a fixation means. Furthermore, even if Smuck did disclose a fixation means, such would certainly not be disclosed by Smuck to be cooperating with a controllable cooling means.

Because the prior art does not disclose the limitations of Applicant's invention, the prior art does not anticipate claims 11-13 under 35 U.S.C. §102(b). Therefore, the Applicant respectfully requests the Examiner reconsider and withdraw the rejection of claims 11-13 under 35 U.S.C. §102(b).

Rejection of Claims 11-13 under 35 U.S.C. § 103(a)

Claims 11-13 stand rejected under 35 U.S.C. § 103(a) as being obvious in light of Smuck et al. This rejection is respectfully traversed, to the extent that it is maintained, and withdrawal of the rejection is requested in view of the following comments.

To make out a *prima facie* case of obviousness under 35 U.S.C. § 103(a), there must exist some motivation, either generally available to one of ordinary skill in the art or expressly stated in the prior art, to modify the known prior art to arrive at the claimed invention. For a 35 U.S.C. § 103(a) rejection, the examiner should set forth in the Office Action:

(A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,

(B) the difference or differences in the claim over the applied reference(s),

(C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and

(D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the modification.

MPEP § 706.02j (2000).

Claim 11 recites an apparatus for manufacture of a composite material comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil. The claim was amended to indicate more clearly the parameters of the apparatus, and is outlined above.

As discussed above, Smuck neither discloses nor suggests fixation with a means that is in cooperation with a controllable cooling means. The Examiner has not stated a motivation generally available to one skilled in the art to modify Smuck to add such a step. Based on the disclosure of Smuck, one of skill in the art would have no reason to modify it to include a means for fixation. There is nothing in the Smuck indicating a motivation to modify, and the Examiner has not indicated any such motivation. For these reasons, the claims are non-obvious in view of Smuck.

Rejection of Claims 1-10 under 35 U.S.C. § 103(a)

Claims 1-10 are rejected under 35 USC § 103(a) as obvious over Smuck. Claims 1-10 are further rejected under 35 USC § 103(a) as unpatentable over either of Sumitomo (JP 52-6782) or Hiraoka (JP 61-61849), each in view of Sandt (U.S. Patent No. 2,833,686). Applicant respectfully traverses this rejection and submits that the claims are patently distinguished from the cited references.

To make out a *prima facie* case of obviousness under 35 U.S.C. § 103(a), there must exist some motivation, either generally available to one of ordinary skill in the art or expressly stated in the prior art, to modify the known prior art to arrive at the claimed invention. For a 35 U.S.C. § 103(a) rejection, the examiner should set forth in the Office Action:

(A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,

(B) the difference or differences in the claim over the applied reference(s),

(C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and

(D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the modification.

MPEP § 706.02j (2000).

Claim 1 is amended to recite a method of manufacture of a composite product comprising at least one layer of reinforced woven material and at least one layer of PTFE foil or ePTFE foil. The claim was amended to indicate more clearly the parameters of the method of manufacture. Claims 3-8 are dependant on claim 1, and additional elements are added to these claims. Therefore claims 3-8 are patentable if claim 1 is patentable. Claim 9 is amended to recite a composite product comprising at least one layer of reinforced woven material and at least one layer of PTFE foil or ePTFE foil. The claim was amended to indicate more clearly the parameters of the product. Claim 10 is dependant on claim 9, and is therefore patentable if claims 9 is patentable.

Smuck fails to disclose beginning temperatures as high as those used by Applicant. The temperatures of Smuck are too low to allow Applicant's invention to work. Further, Smuck neither discloses nor suggests fixation and rapid cooling from a high sintering temperature (300 to 420 °C) to a temperature below 50 °C. The Examiner has not stated a motivation generally available to one skilled in the art to utilize Smuck's patent process to sinter the materials. The Examiner has also failed to state a motivation for requiring the process to be run at significantly higher temperatures. Since the process disclosed in Smuck does not disclose the process of Applicant's invention, the process disclosed in Smuck cannot disclose the method of manufacture or the product claimed.

Claim 1 is further rejected under the Sumitomo patent in view of Sandt. The Sumitomo patent does not disclose a process of laminating PTFE where the laminated foils are sintered by heating. The Sumitomo process is slow and only suitable for very thin films. The composite material in the present invention is at least partly fixed during the cooling. Furthermore, the cooling is carried out quite rapidly compared to the Sumitomo method. In Applicant's invention,

the effect of fixing the material by applying pressure makes it possible to carry out the rapid cooling without risking any critical shrinkage, warping, or bending. In the present invention, the lamination may be carried out with PTFE-foils with a thickness of 0.5 to 1.5 mm, whereas the foils in Sumitomo are 0.05 to 0.1 mm in thickness. Combining the Sumitomo patent with the Sandt patent does not remedy the noted defects. Further, the Sandt patent does not disclose a rapid cooling step. The Examiner has failed to state a motivation generally available to one skilled in the art for requiring the Sumitomo method to be run to allow for the thicker PTFE-foils. The Sumitomo patent fails to articulate such a motivation and the Sandt patent does not remedy this defect. Thus, the Sumitomo patent and the Sandt patent cannot serve as a proper basis for a rejection under 35 U.S.C. § 103(a).

Claim 1 is further rejected under the Hiraoka patent in view of Sandt. The Hiraoka patent does not disclose a lamination process for laminating a PTFE film onto a glass fabric. The temperatures disclosed in Hiraoka are too low for any sintering of PTFE to occur. The process and the material obtained are directed towards thermoplastic materials that are laminated by a melt-bonding process. Combining the Sumitomo patent with the Sandt patent does not remedy the noted defects. Further, the Sandt patent does not disclose a rapid cooling step. Examiner has failed to state a motivation generally available to one skilled in the art for requiring the Sumitomo patent to laminate a PTFE film onto a glass fabric or to increase the temperature to allow for sintering to occur. The Sumitomo patent fails to articulate such a motivation and the *Sandt* patent does not remedy this defect. Thus, the Sumitomo patent and the Sandt patent cannot serve as a proper basis for a rejection under 35 U.S.C. § 103(a). For these reasons, the claims are patentable over the prior art.

Conclusion

In view of the amendments and comments presented herein, favorable reconsideration in the form of a Notice of Allowance is respectfully requested.

Respectfully submitted,
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Marked up Version of Claims

1. (Amended) A method of manufacture of a composite product comprising at least one layer of [reinforced] reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, wherein said at least one layer of [the] foil [or foils are] is laminated together with said at least one [the] layer [or layers] of woven material [under the use of] by [heating and pressurising], heat and pressure, wherein the composite material is subsequently cooled in a fully or partly fixed state, and wherein said composite material is cooled from about 300 to 420 ° C to about 50 ° C in about 0.1 to 240 seconds [characterised in that the composite material subsequently is cooled in a fully or partly fixed state].

2. (Amended) A method according to claim 1, wherein said composite material is cooled from [characterised in that the cooling is carried out over a period of time of approximately 0.1 to 240 seconds from a temperature of 300 to 420 °C, preferably 20 to 120 seconds from a temperature of] about 380 to 400 °C to [a temperature of] about 50 °C in about 20 to 120 seconds.

3. (Amended) A method according to claim 1 [or 2, characterised in that], wherein the composite material is subject to a tension during [the] cooling.

4. (Amended) A method according to claim 1, further comprising applying pressure to the composite material [s 1-3, characterised in that 1, wherein the composite material undergoes a combined cooling and pressure operation] by means for pressure application.

5. (Amended) A method according to claim [s 1-4, characterised in that] 4, wherein the means for pressure [supply] application is provided with cooling means.

6. (Amended) A method according to claim[s 1-5, characterised in that] 4, wherein the pressure [supply] is applied [provided] continuously by [means for pressure supply comprising] at least one roller.

7. (Amended) A method according to claim[s 1-5, characterised in that] 4, wherein the pressure [supply] is [provided] applied intermittently by [means for pressure supply comprising] a pressure surface.

8. (Amended) A method according to claim[s 1-7, characterised in that] 1, wherein the composite material is cooled [under a substantively uniform] by a substantially uniform pressure [over] on the surface [by a cooling surface].

9. (Amended) A composite product comprising at least one layer of reinforcing woven material and at least one layer of PTFE or ePTFE foil, wherein said at least one foil is laminated together with said at least one layer of woven material by heat and pressure, wherein the composite material is subsequently cooled in a fully or partly fixed state , and wherein said composite material is cooled from about 300 to 420 ° C to about 50 ° C in about 0.1 to 240 seconds [manufactured according to the claims 1-8, characterised in that the product comprises at least one foil layer of PTFE or ePTFE foil and at least one layer of reinforcing woven material].

10. (Amended) A composite product according to claim 9, wherein [characterised in that] the reinforcing woven material [consists at least partly of] comprises glass fiber[re] fabric or PTFE coated glass fiber[re] fabric.

11. (Amended) An apparatus for manufacture of a composite material comprising at least one layer of reinforcing woven material and at least one layer of PTFE foil or ePTFE foil, where [the] said at least one layer of foil [or foils are] is laminated together with said at least one [the] layer [or layers] of woven material [under the use of heating and pressurising] by heat and pressure, said apparatus comprising [as the apparatus comprises] means for laminating said at least one layer of reinforcing woven material and said at least one layer of foil together, wherein said at least one layer of foil is laminated together with said at least one layer of woven material by heat and pressure. as the apparatus comprises means for lamination of the composite material

by a combined pressure and heat supply, wherein [lamination of the composite material by a combined pressure and heat supply, characterised in that] the apparatus further comprises means for fixation of the uncooled or [at least only] partly cooled composite material and with said means co-operating controllable cooling means.

12. (Amended) An apparatus according to claim 11, wherein [characterised in that] the means [of the apparatus] for fixation and the associated controllable cooling means comprise[s] at least one pressure surface [including] having integrated cooling means.

13. (Amended) An apparatus according to claim 11, wherein [characterised in that] the means [of the apparatus] for fixation and the associated controllable cooling means comprise[s] at least one roller having integrated cooling means.